CLAIMS

The invention claimed is:

1. A method for creating a dither pattern structure, said method comprising:

    a. establishing a first multi-dimensional array of dither pattern tiles, said array comprising a first upper horizontal spatial frequency bound, a first lower horizontal frequency bound, a first upper vertical spatial frequency bound, a first lower vertical spatial frequency bound, a first upper temporal frequency bound and a first lower temporal frequency bound;

    b. wherein said spatial frequency bounds and said temporal frequency bounds define a high-pass pattern configuration;

    c. establishing a second multi-dimensional array of dither pattern tiles, said array comprising a second upper horizontal spatial frequency bound, a second lower horizontal frequency bound, a second upper vertical spatial frequency bound, a second lower vertical spatial frequency bound, a second upper temporal frequency bound and a second lower temporal frequency bound;

    d. wherein said second lower temporal frequency bound is lower than said first lower temporal frequency bound; and

    e. associating said first multi-dimensional array of dither pattern tiles with a first range of image characteristic values; and

    f. associating said second multi-dimensional array of dither pattern tiles with a second range of image characteristic values.

2. A method as described in claim 1 wherein said image characteristic values comprise luminance values.

3. A method as described in claim 1 wherein said image characteristic values comprise localized average luminance values.

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4. A method for adaptive processing of a digital image, said method comprising:

    a. receiving a digital image;

    b. designating a location in said image for application of a dither pattern tile;

    c. determining a local image characteristic for that tile location;

    d. selecting a first dither pattern tile set from a plurality of dither pattern tile sets wherein said selecting is based on said local image characteristic.

5. A method for adaptive processing of a digital image, said method comprising:

    a. dividing a digital image into tile block locations;

    b. determining a local luminance characteristic for each of said tile block locations;

    c. selecting a dither pattern array from among a plurality of dither pattern arrays wherein each of said arrays is associated with a range of values of said local luminance characteristic.

6. A method for adaptive processing of a digital image, said method comprising:

    a. establishing a first multi-dimensional array of dither pattern tiles, said array comprising a first upper horizontal spatial frequency bound, a first lower horizontal frequency bound, a first upper vertical spatial frequency bound, a first lower vertical spatial frequency bound, a first upper temporal frequency bound and a first lower temporal frequency bound;

    b. establishing a second multi-dimensional array of dither pattern tiles, said array comprising a second upper horizontal spatial frequency bound, a second lower horizontal frequency bound, a second upper vertical spatial frequency bound, a second lower vertical spatial frequency bound, a second upper temporal frequency bound and a second lower temporal frequency bound, wherein said second lower temporal frequency bound is lower than said first lower temporal frequency bound; and

    c. associating said first multi-dimensional array of dither pattern tiles

with a first range of local luminance characteristic values; and

    d. associating said second multi-dimensional array of dither pattern tiles with a second range of local luminance characteristic values.

    e. dividing a digital image into tile block locations;

    f. determining a local luminance characteristic for a multiplicity of said tile block locations;

    g. selecting a dither pattern tile from said first multi-dimensional array of dither pattern tiles for application on a first set of tile block locations when said first tile block locations have local luminance characteristic values that fall within said first range; and

    h. selecting a dither pattern tile from said second multi-dimensional array of dither pattern tiles for application on a second set of tile block locations when said second tile block locations have local luminance characteristic values that fall within said second range.

7. A system for adaptive processing of a digital image, said system comprising:

    a. a first multi-dimensional array of dither pattern tiles, said array comprising a first upper horizontal spatial frequency bound, a first lower horizontal frequency bound, a first upper vertical spatial frequency bound, a first lower vertical spatial frequency bound, a first upper temporal frequency bound and a first lower temporal frequency bound, wherein said first multi-dimensional array is associated with a first range of local luminance characteristic values;

    b. a second multi-dimensional array of dither pattern tiles, said array comprising a second upper horizontal spatial frequency bound, a second lower horizontal frequency bound, a second upper vertical spatial frequency bound, a second lower vertical spatial frequency bound, a second upper temporal frequency bound and a second lower temporal frequency bound, wherein said second lower temporal frequency bound is lower than said first lower temporal frequency bound, wherein said second multi-dimensional array is associated with a second range of local luminance characteristic values; and

    c. a selector for selecting between said first array and said second array based on the local luminance characteristic value for a location

in said image.

8. An image display device comprising:
    a. image storage for storing an image to be displayed;
    b. a dither array storage having contents comprising
        i. a first multi-dimensional array of dither pattern tiles, said array comprising a first upper horizontal spatial frequency bound, a first lower horizontal frequency bound, a first upper vertical spatial frequency bound, a first lower vertical spatial frequency bound, a first upper temporal frequency bound and a first lower temporal frequency bound, wherein said first multi-dimensional array is associated with a first range of local luminance characteristic values; and
        ii. a second multi-dimensional array of dither pattern tiles, said array comprising a second upper horizontal spatial frequency bound, a second lower horizontal frequency bound, a second upper vertical spatial frequency bound, a second lower vertical spatial frequency bound, a second upper temporal frequency bound and a second lower temporal frequency bound, wherein said second lower temporal frequency bound is lower than said first lower temporal frequency bound, wherein said second multi-dimensional array is associated with a second range of local luminance characteristic values;
    c. a processor for determining a local luminance characteristic value for an image location; and
    d. a selector for selecting between said first array and said second array based on the local luminance characteristic value for said image location.